

SKAM27

New dispersive solid phase microextraction sorbent based on sol-gel hybrid material for non-steroidal anti-inflammatory drugs analysis in water

Wan Aini Wan Ibrahim^{*1,2}, Mashkurah Abd Rahim¹, Zainab Ramli^{1,2},
Mohd Marsin Sanagi^{2,3}

¹Separation Science and Technology Group (SepSTec), Department of Chemistry,
Faculty of Science, Universiti Teknologi Malaysia (UTM), Johor, MALAYSIA

²Nanotechnology Research Alliance, Universiti Teknologi Malaysia (UTM), Johor, MALAYSIA

³Ibnu Sina Institute for Fundamental Science Studies, Universiti Teknologi Malaysia (UTM), Johor, MALAYSIA

Dispersive solid phase microextraction (DSPME) is a simple and environmental friendly sample preparation technique. In DSPME, the sorbent is used for trapping the analyte/s out of the solution and then the analyte/s is to a smaller volume of a second desorption solvent. In this study, a new DSPME sorbent material based on a hybrid organic–inorganic methyltrimethoxysilane–cyanopropyltriethoxysilane (MTMOS–CNPrTEOS) was synthesized by using two steps sol–gel method. The new DSPME hybrid sorbent was used in determination of three selected NSAIDs namely, diclofenac sodium, ketoprofen and mefenamic acid in water samples prior to high performance liquid chromatography with ultraviolet (HPLC–UV) detection. Under the optimized conditions, the method demonstrated good linearity ($0.2\text{--}500\ \mu\text{g L}^{-1}$) with excellent coefficient of determination ($r^2 > 0.9991$), good RSDs ($<2.4\%$, $n = 3$), good limit of detection ($0.03\text{--}0.12\ \mu\text{g L}^{-1}$) and excellent recoveries ($93.5\text{--}97.6\%$). The DSPME method using the new sol-gel hybrid MTMOS–CNPrTEOS material combined with HPLC–UV proved to be a simple, cost efficient and requires minimal amount of organic solvent that support green chemistry concepts.

Mashkurah Binti Abd Rahim

University Teknologi Malaysia, Skudai, Johor, Malaysia

Phone: +6019 2067500

E-mail: mashk852000@yahoo.com

Research interests: Analytical Chemistry

2003-2006	Diploma in Science, Universiti Teknologi Mara (UiTM), Malaysia
2006-2009	B. Sc.(Applied Chemistry), Universiti Teknologi Mara (UiTM), Malaysia
2009-2010	M. Sc.(Chemistry), Universiti Teknologi Malaysia (UTM), Malaysia
2010-present	PhD student at Universiti Teknologi Malaysia (UTM), Malaysia

